Substance Use and Work Disabilities

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EXECUTIVE SUMMARY

This study examines the connection between physical limitations that affect an individuals work-role and substance use. The measures examined include drinking and drinking problems, and the use of tranquillizers and sleeping pills. Measures of disability examined in this report include limitation status, type of disability, duration of limitation and need for assistance.

The study employs data derived from the Addiction Research Foundation's Ontario Adult Alcohol and Other Drug Use Survey, an on-going survey of over 1,000 Ontario adults aged 18 and over. The analyses employ information from 869 respondents who reported no physical limitations that affected their work or job (n=768), some or moderate limitations (n=70), or total limitations that precluded their employment (n=31). Interviews were conducted during February and March, 1989.

Findings

Alcohol Use & Problems

- Frequency of drinking and drinking problems were significantly related to physical limitations.
    - Those reporting total limitations drank less often than both those with no limitations and those with moderate limitations.
    - Those with moderate limitations reported the highest rate of alcohol problems: 39% of those with moderate limitations reported at least one alcohol problem, compared with 7% of those with total limitations and 24% of those with no limitations.
    - The high rate of alcohol problems among those with moderate limitations still existed after controlling for age, gender and frequency of drinking.
    - Among those with disabilities, drinking or drinking problems were not associated with type of limitation, duration of limitation or need for assistance.

Tranquillizer & Sleeping Pill Use

- The use of both sleeping pills and tranquillizers significantly increased with increasing physical limitations.
    - Among those with no limitations 7% reported using sleeping pills during the prior year, compared with 10% of those with moderate limitations and 31% of those with total limitations.
    - Among those with no limitations, 3% reported using tranquillizers during the prior year, compared with 18% of those with moderate limitations and 30% of those with total limitations.
    - For both sleeping pills and tranquillizers, the relationship of increasing use with increasing disability still occurred after taking into account the age and gender of the person.
    - Among those with disabilities, tranquillizer use was related to duration of limitation and need for assistance. Those who reported a physical limitation for one to two years reported the highest rate of use (53%), compared with 20% among those with a disability less than one year and 17% among those with a disability three years or longer. Tranquillizer use was highest among those needing the assistance of others for getting around or for personal care: almost half of those reporting the need for assistance at least sometimes used tranquillizers compared with only 14% who required assistance rarely or never.
    - Two groups reported particularly high rates of tranquillizer use. The first group were females with total limitations. Although tranquillizer use did not differ between males and females among those with no limitations or those with moderate limitations, among those with total limitations females were twice as likely as males to use tranquillizers (50% of females with total limitations reported use compared with 21% of males with total limitations).

      The second group were those aged over forty years with sensory disabilities (primarily hearing and vision impairments). Among those with sensory disabilities, tranquillizer use increased with age, but it did not increase with age for those with muscular or respiratory disabilities (at least 65% of those aged over 40 years with sensory disabilities used tranquillizers versus less than 25% among those with other disabilities).

Discussion

The goal of this research was to examine the association between substance use and work role limitations among a representative sample of adults. The study has made some important contributions to this research area. First, the data were based on a representative sample, thus, the results are widely generalizable. Second, the scope of the study was broad, including an array of both disability and drug use and abuse measures. Finally, the results of the study are strengthened by the fact that differences in substance use between the disabled and nondisabled cannot be attributed to factors such as age and gender. Overall, the findings show a significant association between work limitations and substance use. The nature of the link between the two, however, is far from simple. Regarding alcohol problems we found that those with moderate limitations have greater problems than those with no limitations or those with total limitations. Although at this time we cannot account for the high rate of alcohol problems among this group, one hypothesis is that they experience a greater level of negative well-being. Indeed, unlike those with no limitations or those with total limitations, those with moderate limitations experience the tribulations of both having a physical limitation and being employed. This dual role may predispose them to poorer psycho-social health, such as depression and low self-esteem, which are strongly associated with alcohol misuse in their own right.

Regarding medical drugs, we found that the use of sleeping pills and tranquillizers increased significantly with increasing disabilities. We found that females with total limitations and those aged over forty with sensory disabilities were at exceptional risk for tranquillizer use. The relationship between increasing disability and increasing tranquillizer use warrants close scrutiny. It is important to determine whether this relationship is due to poorer health of the disabled or due to inappropriate medical drug use.

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SOMMAIRE

Cette étude analyse le rapport entre l'usage d'alcool et d'autres drogues et les déficiences physiques qui restreignent le travail des salariés. On y examine aussi des facteurs comme l'alcool au volant, et l'usage de tranquillisants et de somnifères. Les déficiences sont définies en fonction des restrictions au travail, du type d'invalidité, de la durée de l'invalidité et du degré d'assistance requis.

Les données de l'étude sont tirées du sondage sur la consommation d'alcool et de drogue parmi la population adulte de l'Ontario, mené tous les deux ans par la Fondation de la recherche sur la toxicomanie (la ARF). Plus de 1 000 adultes ontariens âgés de 18 ans ou plus sont régulièrement interrogés. Les analyses du présent sommaire sont basées sur les réponses de 869 répondants, soit les personnes sans invalidité et aptes à travailler (n = 768), les individus soumis à certaines restrictions (n = 70), et les personnes incapables de travailler (n = 31). Le sondage s'est déroulé en février et en mars 1989.

Conclusions

La consommation d'alcool et les problèmes connexes

- La fréquence de la consommation d'alcool et des problèmes connexes est étroitement liée aux déficiences physiques.
- Les personnes incapables de travailler buvaient moins souvent que les individus sans restrictions ou aux capacités modérément restreintes.
- Les personnes aux capacités modérément restreintes faisaient état du taux le plus élevé de problèmes d'alcool : 39 % d'entre elles avaient au moins un problème lié à l'alcool, comparativement à 7 % des personnes incapables de travailler et à 24 % des gens aptes à travailler.
- Le pourcentage élevé de problèmes d'alcool des personnes aux capacités modérément restreintes est demeuré constant, quels que soient l'âge, le sexe ou la fréquence de consommation.

- Chez les personnes invalides, il n'y a pas de rapport établi entre la consommation et les problèmes d'alcool, d'une part, et le type d'invalidité, la durée de l'invalidité et le besoin d'assistance, d'autre part.

L'usage de tranquillisants et de somnifères

- L'usage de somnifères et de tranquillisants augmente proportionnellement à la gravité des restrictions physiques.

- Chez les personnes sans restrictions, 7 pour cent avaient fait usage de somnifères au cours de l'année écoulée, comparativement à 10 pour cent des individus aux capacités modérément restreintes et à 31 pour cent des personnes incapables de travailler.

- Chez les personnes sans restrictions, 3 pour cent avaient fait usage de tranquillisants au cours de l'année écoulée, comparativement à 18 pour cent des répondants aux capacités modérément restreintes et à 30 pour cent des individus incapables de travailler.

- Dans le cas des somnifères et des tranquillisants, la relation proportionnelle entre l'importance de la consommation et la gravité de l'invalidité est toujours présente après considération de l'âge et du sexe de la personne.

- L'usage de tranquillisants chez les personnes invalides se définit en fonction de la durée de l'invalidité et du besoin d'assistance. Les personnes invalides depuis un an à deux ans avaient le taux d'utilisation le plus élevé (53 pour cent), comparativement à 20 pour cent des personnes invalides depuis moins d'un an et à 17 pour cent des gens handicapés depuis trois ans ou plus. L'usage de tranquillisants est le plus élevé chez les personnes qui dépendent d'autrui pour le transport et les soins personnels. Près de la moitié des handicapés ayant parfois besoin d'assistance faisaient usage de tranquillisants, comparativement à seulement 14 pour cent des individus qui n'ont jamais ou rarement besoin d'une telle aide.

- Les taux d'utilisation des tranquillisants sont particulièrement prononcés chez deux groupes. Il s'agit, en premier lieu, des femmes incapables de travailler. Bien que l'usage de tranquillisants ne varie pas entre les hommes et femmes aptes à travailler ou aux capacités modérément restreintes, les femmes incapables de travailler avaient deux fois plus tendance que les hommes dans cette catégorie à faire usage de tranquillisants (50 pour cent des femmes incapables de travailler par rapport à 21 pour cent des hommes).
- Il s'agit, en second lieu, des personnes âgées de plus de 40 ans présentant des déficiences sensorielles (en particulier les déficiences visuelles et auditives). L'usage de tranquillisants chez ce groupe s'accroît avec l'âge, contrairement aux personnes dont les déficiences sont musculaires ou respiratoires (au moins 65 pour cent des handicapés visuels ou auditifs faisaient usage de tranquillisants, comparativement à moins de 25 pour cent des personnes présentant un autre type d'invalidité).

Notes explicatives

Le but de cette étude était d'examiner le lien entre l'usage d'alcool et d'autres drogues et les restrictions au travail parmi un échantillon représentatif de la population adulte. Cette étude contribue énormément à ce secteur de recherche. Premièrement, les données recueillies ont une grande application puisqu'elles sont tirées d'un échantillon représentatif de la population. Deuxièmement, la portée de l'étude était assez vaste et s'intéressait à une gamme de facteurs relatifs aux types d'invalidités et à la consommation d'alcool et de drogues. Enfin, les conclusions de l'étude ne permettent nullement d'attribuer à l'âge et au sexe les différences observées entre la consommation des personnes invalides et celle des individus aptes à travailler. Dans l'ensemble, les résultats font ressortir le lien étroit entre les restrictions au travail et l'usage d'alcool ou d'autres drogues. Ce lien, toutefois, est d'une nature très complexe. Dans le cas de l'alcool, nous avons constaté que les personnes aux capacités modérément restreintes ont davantage de problèmes que les individus aptes à travailler ou incapables de travailler. Même si nous ne pouvons, à l'heure actuelle, expliquer la consommation élevée d'alcool chez ce groupe, nous supposons que ces individus font face à des expériences plus négatives. En effet, contrairement aux individus aptes à travailler ou incapables de travailler, les personnes dont les capacités sont modérément restreintes doivent composer à la fois avec un handicap physique et un emploi rémunéré. Cette dualité les prédispose aux problèmes médicaux et psychosociaux

(comme la dépression et la dévalorisation de soi), lesquels peuvent mener à un usage inadéquat de l'alcool.

Dans le cas des médicaments, nous avons constaté que l'usage de somnifères et de tranquillisants augmente proportionnellement à la gravité de l'invalidité. Les femmes incapables de travailler et les femmes de 40 ans et plus présentant une déficience sensorielle courent un risque très élevé d'avoir recours aux tranquillisants. Le lien entre la gravité de l'invalidité et le degré d'utilisation des tranquillisants doit être examiné avec énormément de prudence. Il faut d'abord déterminer si ce rapport proportionnel est attribuable à la mauvaise santé des personnes atteintes d'invalidité ou à l'usage inadéquat des médicaments.

Substance Use and Work Disabilities Among a General Population

Abstract

Using data derived from a representative survey of 869 Ontario adults, we examine the association between work disabilities and substance use, i.e. drinking, alcohol problems, sleeping pills and tranquillizers. Overall, we found a significant association between substance use and disability. For alcohol problems, we found that those with moderate limitations reported the greatest number of problems, holding constant age, gender, income and frequency of drinking. For the use of sleeping pills and especially tranquillizers, we found a strong positive relationship to limitation status. A number of significant interactions involving tranquillizer use showed that two groups, females with total limitations and those aged over 40 years with sensory disabilities, reported exceptionally high rates of tranquillizer use.

Some of the strongest correlates of substance use and problems among adults are factors centering on transitory and chronic strains that impair social, physical and psychological well-being. We include here such factors as negative life events, poor health, depression and unemployment (Aneshensel & Huba 1983; Kessler, House & Turner 1987; Crutchfield & Gove 1984; Johnson & Kaplan 1990).

One group that may experience an additive effect for such strains are those experiencing significant work role limitations due to physical disabilities. Yet the few studies that have examined the association between substance use and disabilities have not found consistent results. As well, the research has been hampered by varied definitions of "disability". We believe that Nagi (1976) has offered the most complete conceptual framework and operationalization of disability, "the inability or limitations in performing social roles and activities such as in relation to work, family, or to independent living" (p.441).

The prevalence of disabilities and limitations derived from epidemiological data are dependent upon the definition of disability applied. Using the criteria of work role or activity limitation, between 10% and 16% of the general population report disabilities. (Nessner 1990; Wolfe & Haveman 1990; Charette 1988; Health & Welfare Canada 1988; Statistics Canada 1986). In contrast, about 6% report chronic physical disabilities (Nagi 1976; Wood & Turner 1985).

Despite theoretical grounds that those with work role limitations should experience greater substance use and consequent problems, the research findings are equivocal. Some show that rates of alcohol and drug

abuse among the disabled far exceed those in the general population (Hepner, Kirschbaum, & Landes 1980-81; Anderson 1980-81), yet recent empirical studies have been unable to support such relationships (Dean, Fox & Jensen 1985; Meyers, Branch & Lederman 1988). Dean et al failed to find any significant differences in the use of alcohol and other drugs between a sample of 66 disabled students and 115 nondisabled students. However, results of the study are difficult to interpret because respondents reporting alcohol, drug or emotional problems were omitted from the study.

Meyer et al studied a sample of 234 clients of independent living centers who required need for personal care services. Between 1982 and 1985, participants were interviewed by telephone monthly. The authors found that substance use was not statistically related to factors such as bed disability days, number of hospitalizations, emergency room visits, physician or nurse contacts, or length of stay. They concluded that, "there is no evidence of widespread alcohol or drug abuse and, therefore, no basis for labelling those with major disabling conditions as a population at high risk of alcohol, tobacco or drug abuse" (p.679). Further, they suggested such labelling would result in misallocation of health resources and the further stigmatization of the disabled. The major weakness of the Meyer et al study for determining the extent of risk was that their sample was restricted to adults with major disabling conditions. Without a comparison group of nondisabled adults, they could not fully address the issue of differential risks of substance use and problems between disabled and nondisabled individuals.

Moore and Polsgrove (1989), in one of the more extensive reviews of this literature, concluded that the research findings regarding the prevalence of substance use and problems among the disabled are less than conclusive and have been limited in both volume and methodology. They also lamented the lack of large-scale epidemiological studies in the area.

Employing data from a general population survey of adults, our purpose in this study is to compare the use of alcohol and alcohol problems and the use of sleeping pills and tranquillizers among three groups - those reporting (1) no work limitations, (2) some or moderate work limitations and (3) total limitations.

Method

We employ data derived from a modified-probability household survey of 1,101 respondents aged 18 and over personally interviewed in their homes between February and March, 1989 (Adlaf & Smart 1989). For our purposes here we focus on 869 respondents (444 males and 418 females), who either reported no physical limitations affecting their employment status (N=768), some or moderate physical limitations limiting their employment (N=70), or total physical limitations that precluded employment (N=31). Excluded from our analysis were those not in the work force for reasons unknown (N=232).

The survey, fielded by the Gallup Organization, maintains a modified probability sample in all areas over 1,000 in population. A quota sample is used in rural farm and rural nonfarm centres. The sampling procedure, designed to produce an approximation of the adult civilian population, 18 years of age and older and living in Ontario (except for those persons living in institutions such as prisons or hospitals or those residing in far northern regions), incorporates stratification by six community-sized groups based on the most recent census data. The sampling design is based on census statistics which are also employed to ensure a representative age-by-gender distribution. The data are weighted to proportionately reflect this population distribution.

The major independent variable of interest to us here is current work role limitations, which was measured by response to the following question:

"Which of the following statements best describes your present working situation?" Possible responses were: (1) "I have no physical limitations or disabilities which affect my working" (2) "Because of physical conditions, I am limited in the type of work I can do" (3) "I cannot hold any job at all because of physical limitations or disabilities", and (4) "Not in work force/retired". Among the 101 reporting physical limitations we also collected information on three additional disability factors: the nature of their physical limitation, the length of time they experienced the limitation and the frequency with which they required the assistance of others for getting around or for personal care. The nature of the limitation was measured by responses to the following question: "Which of the following best describes the nature of your primary disability?" The response categories included the following: (1) vision, (2) hearing, (3) respiratory, (4) circulatory and (5) muscular or skeletal. The duration of the limitation was measured on an 8-point scale ranging from less than one month (1) to since birth (8), while the need for assistance was measured on a 5-point scale ranging from always (1) to never (5). In total, we incorporate three variables in order to control for the possibility of spurious results. These factors are the respondent's gender, age (measured continuously) and gross family income (measured on a 7-point scale from under $10,000 to $50,000 and over).

Turning to our dependent variables, we employ three alcohol measures in this study. Frequency of drinking in the 12 months prior to the interview was measured on a 7-point scale ranging from never (1) to near daily (7). Frequency of drinking five or more drinks on a single occasion

during the 12 months prior to the interview was measured on a 9-point scale ranging from daily (1) to never (9). Alcohol problems were measured by the 4-item CAGE scale (Mayfield et al 1974). Individuals were asked to respond positively or negatively to the following questions: (1) Have you ever felt you ought to cut down on your drinking? (2) Have people annoyed you by criticizing your drinking? (3) Have you ever felt bad or guilty about your drinking? (4) Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover? Positive responses are summed, resulting in values from 0 to 4, and a score of two or more is indicative of problem drinking. Sleeping pill and tranquillizer use during the 12 months prior to the interview are dichotomous measures indicating use versus non use. No distinction was made between prescription and non-prescription use.

We focus here on two primary analyses. The first examines differences in substance use among the three limitation groups (non limitations, some or moderate limitations and total limitations), controlling for the other variables in the model. Because the relationship between limitation status and substance use may vary by gender or age, we also included in the initial model two two-way interactions (limitation status-by-gender and -by-age). Second, we also examine the association between the four disability factors (limitation status, type of disability, duration, and need for assistance) among those with work limitations. For these initial models we included eight two-way interactions: gender- and age-by-assistance, by-limitation, by-type, and by-length. The regression for alcohol

problems employed ordinary least squares regression while for the dichotomous measures (sleeping pill and tranquillizer use) logistic regression was used. Initial examination of the data showed nonnormality in errors due to the highly skewed CAGE score; consequently, we employed a square root transformation of the CAGE scores. Final models included only those interactions which exceeded the .10 probability level. Our choice here of the .10 level for interactions is due to the exploratory nature of this work and the small sample size of the disability subgroups.

Results

Alcohol Use & Problems Among the Total Sample

In Table 1 we compare alcohol use and problems among those reporting no work limitations, some or moderate work limitations and total limitations. A one-way ANOVA shows a significant overall group difference for frequency of drinking (F=6.07; p=.002). Multiple comparison tests showed that those with moderate limitations report more frequent drinking (4.16) compared to those with no limitations (4.00) and those with total limitations (2.80). Drinking did not differ between those with no limitations and those with total limitations. One other notable feature regarding frequency of drinking is that those with total limitations are more likely to be abstainers than are those with no limitations or moderate limitations (38% versus 12% and 9%, respectively).

Turning to heavier patterns of alcohol consumption, i.e., consuming five or more drinks in a single sitting during the past year, we find no significant group difference in the frequency of heavy drinking (F=1.21; p=.298). However, the categorical analysis shows a significant association (x^2(6df)=13.97; p=.030), suggesting that those with moderate or total limitations are less likely to report heavy drinking than are those with no limitations.

In Table 1 we also present comparisons regarding self-reported alcohol problems based on the 4-item CAGE scale. Although there is a consistent pattern for the moderate limitation group to report the highest rate none of these differences is significant at the .05 level. Two items, being annoyed or criticized by others and feeling that they should cut down their drinking, are marginally significant. Those with moderate limitations report the highest rate (15%) of CAGE positive scores, i.e., those reporting positively to two or more items. This rate, however, is not significantly different compared to those with no limitations (10%) or those with total limitations (3%). The analysis of the total CAGE scores, however, shows a significant relationship. Those with moderate limitations report significantly more problems (.65) than do those with no limitations (.39) and those with total limitations (.15) (F=4.39; p=.013). A similar relationship holds among drinkers as well. Those with moderate limitations report more problems (.71) than drinkers with no limitations (.45), but not significantly more than those with total limitations (.25) (F=3.19; p=.042).

In Table 2 we show the results of regressing the square root of the CAGE scores on age, gender, frequency of alcohol use and two dummy variables (SOME, TOTAL), representing limitations status. The results confirm the earlier ANOVA. Those with moderate limitations report higher CAGE scores than do those with total limitations or those with no limitations, holding constant age, gender and frequency of drinking. The age-by-limitation and gender-by-limitation interactions, which were tested prior to the final model, showed that the relationship between limitations and alcohol

problems were not differentially dependent upon either gender or age. Initial examination of these data showed that gross family income significantly declined with increasing limitation status. However, further regression analyses including income did not substantively alter the findings.

In Table 3 we consider the role of length of limitation, need for assistance and type of disability among the 101 reporting some or total limitations. Although we must be cautious given the small sample size, no comparisons in Table 3 are statistically significant at the .05 level. In Table 4 we show results of regressing the square root of the CAGE score on age, gender, alcohol use, income, and the four disability measures (limitation, length of limitation, need for assistance and type of limitation) among the disability subsample. We show two regression models, one with and one without income. Ignoring income, we find that those reporting moderate limitations report significantly greater alcohol problems, holding constant age, gender and the remaining disability factors. However, when we include income into the model, we find that alcohol problems do not differ significantly among the three limitation groups. The results in Table 4 also show that the disability factors (length, type and assistance) are not significantly related to alcohol problems.

Use of Sleeping Pills and Tranquillizers

We see in Table 5 that the use of both sleeping pills and tranquillizers are significantly related to work limitations. Among those with no limitations,

7% report the use of sleeping pills compared with 10% of those with moderate limitations and 31% of those with total limitations. A similar relationship holds for tranquillizer use. Three percent of those with no limitations report the use of tranquillizers versus 18% of those with moderate limitations and 30% of those with total limitations.

Table 6 presents data on the type of limitation, duration of limitation and need for assistance among the disabled subsample. The results show that tranquillizer use occurs most often among those whose limitation occurred within one to two years, and among those who require assistance at least sometimes.

In Table 7 we present the results of four logistic regressions predicting the use of sleeping pills and tranquillizers among the total sample and among the disabled subsample. Supplementary analyses showed that the inclusion of income did not substantially alter the results we present.

The upper panel in Table 7 presents the results for the total sample. Beginning with sleeping pills, we see that females are more likely to report use than are males, regardless of limitation status. More importantly, we see that limitation status is significantly related to sleeping pill use regardless of age or gender. The relationship, which confirms the earlier bivariate analyses, shows that those reporting total work limitations are the most likely to use sleeping pills. Compared to those with no work disabilities, the odds of using sleeping pills are increased by 1.5 times (i.e., the natural logarithm, 2.718, raised to the exponent B, .392) for those with moderate limitations and by 6.5 times for those with total limitations.

The regression results of tranquillizer use mostly confirm the earlier results showing increasing tranquillizer use with increasing limitations. Those with moderate limitations and those with total limitations are significantly more likely to use tranquillizers than are those with no limitations. However, the results suggest that this relationship depends differentially upon gender, as indicated by the gender-by-limitation interaction shown in Figure 1.

The interaction shows that among males the relationship between tranquillizer use and limitation status is non-linear, rising from 2% among those with no limitations to 23% and 21% among those with moderate and total limitations, respectively. On the other hand, among females there is a strong linear progression, rising from 5% to 14% to 50% among those with no limitations, moderate limitations and total limitations, respectively.

The bottom panel of Table 7 gives the results of the regression analyses based on the disabled subsample. Of the four disability factors only limitation status is significantly related to sleeping pill use. Holding constant other factors in the model, the odds of using sleeping pills increase by a factor of 4.6 when moving from the moderate limitation group to the total limitation group.

Use of tranquillizers shows a more complex relationship with disability. Taking into account the other factors in the regression, differences in tranquillizer use between those with moderate limitations and those with total limitations are no longer significant. Also no longer significant is the relationship between length of limitation and use. However,

the results show a strong relationship to the need for assistance. The odds of using tranquillizers increase significantly with increasing need for assistance. As we show in Figure 2 the results also suggest that the relationship between type of disability and tranquillizer use is differentially related to age of the respondent. The most notable feature of this relationship shows that among those with "other" disabilities, primarily vision and hearing impairments, predicted tranquillizer use increases significantly with increasing age, rising from 4% among 18 to 29 year olds to at least 58% among older adults, whereas this relationship does not hold among those with muscular or respiratory limitations.

Summary and Discussion

Before proceeding to a discussion of our results, we must first remind readers about the purpose and limitations of this study. Our goal here was to examine the association between substance use and work role limitations among a representative sample of adults. The reader must bear in mind some implications of the methodology employed. First, household surveys may be less likely to capture those with more severe and chronic disabilities. Indeed, certain limitations such as loss of hearing, might preclude survey participation. The small disabled subsample is also a function of the sampling methodology, namely, the total sample size of 1,000. Second, we must stress that our working definition of disability solely applies to those

who report work-role limitations. We do not address limitations or disabilities in other areas of life functioning.

Nonetheless, the strengths of this study are many. First, the data were drawn from a representative epidemiological survey. Second, comparisons were made not only between the disabled and nondisabled, but among different disability levels as well. Some earlier studies have shown essentially no relationship between disability and alcohol and drug use. Yet, some of these were conducted with specialized populations. Few studies have employed general population surveys where there would be a wide range of disability levels. The absence of significant associations in earlier studies may have been due to the restricted range of disabilities studied, or to the attempt to combine all disability levels into a single category. Third, a wide range of substance use measures - alcohol use and problems and medical drug use - were employed. Finally, the analyses controlled for important demographic characteristics, as we found in some cases, that could lead to spurious findings if ignored.

Overall, our findings clearly show a significant association between work limitations and substance use. The nature of the link between the two, however, is far from simple, and depends upon the type of substance being examined and other factors. Regarding alcohol problems, we found that those with some or moderate limitations reported significantly more problems than did those with no limitations or those with total limitations. Indeed, the moderate limitation group appears to be at differential risk for

alcohol problems given that their frequency of drinking does not differ significantly from those with no limitations.

Although we cannot account for the high rate of alcohol problems among the moderate limitation group from our data we feel obliged to speculate about this finding. Unlike those with no limitations or those with total limitations, those with moderate limitations experience the tribulations of both having a physical limitation and being employed. This dual role may predispose those to greater negative well-being, such as depression and low self-esteem, which are strongly correlated with alcohol misuse (Aneshensel & Huba 1983).

Regarding medical drugs, we found that the use of sleeping pills, and especially tranquillizers, increased significantly with increasing disabilities. For both substances, those with total limitations reported the highest rate of use; however, in the case of tranquillizers, this relationship depended on gender. Although tranquillizer use did not differ between males and females among those with no limitations or those with moderate limitations, among those with total limitations females were more than twice as likely as males to use tranquillizers. One question, which we cannot establish from our data, is what factors produce greater tranquillizer use among females.

Among the disabled subsample, we also found significant associations between medical drug use and disability factors. For use of sleeping pills, those with total limitations were more likely to report use than were those with moderate limitations. For tranquillizer use, limitation status was not significantly related to use of tranquillizers; however, use increased

significantly with need for assistance. In addition, we found that among those with sensory limitations (i.e., hearing and vision impairment) tranquillizer use increased with age, but it did not increase for those with muscular or respiratory disabilities.

Readers should be cautious in interpreting the stability of our results in the absence of replication with larger samples. Future work should examine a wider variety of specific limitations, e.g., sensory deprivations, psychological versus physical limitations, neurological versus non-neurological problems, etc. As well, more research is needed to develop a conceptual framework regarding the social-psychological implications of "being disabled" in relation to substance use. Such would give descriptive, epidemiological findings a theoretical base for hypothesis generation.

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Table 1. Work Limitations by Annual Alcohol Use and Alcohol Problems

	No Limitations (n=766) %	Some Limitations (n=67) %	Total Limitations (n=30) %	Total Sample (n=862) %	Comparisons
Used Alcohol During Past 12 Months					
Never	12	9	38	13	
<1 Month	17	22	21	18	
1-3 times a month	23	21	12	22	
1-5 times a week	41	36	23	40	X^2=(8df)=23.07
Near Daily	7	12	7	7	p=.003
Mean Frequency	4.00	4.16	2.80	3.97	F=[2,859]6.07
(SD)	(1.88)	(2.00)	(2.00)	(1.90)	p=.002
Had 5 or More Drinks at a Single Sitting					
1 Week +	10	16	3	10	
1-3 times a month	13	11	16	13	
1-11 times a year	30	13	21	28	X^2 (6df)=13.97
Never in Past Year	47	60	60	48	p=.03
Mean Frequency	7.63	7.57	8.14	7.64	F=[2,856]1.21
(SD)	(1.79)	(2.12)	(1.32)	(1.80)	p=.298
Alcohol Problems (CAGE)					
Cut Down	19	29	11	20	X^2 (2df)=4.41; p=.110
Annoyed	7	16	5	8	X^2 (2df)=5.65; p=.059
Guilty	13	16	5	13	X^2 (2df)=1.57; p=.456
Morning Drink	5	11	5	6	X^2 (2df)=3.46; p=.177
Scored 2+	10	15	3	10	X^2 (2df)=3.47; p=.177
Mean	.39	.65	.15	.40	F=[2,861]4.39
(SD)	(.81)	(1.05)	(.70)	(.83)	p=.013

Table 2. Regression (OLS) of Cage Score (Square Root) on Selected Variables Among the Total Sample (N=853)

Regressors	b	b*	p
Age	-.004	-.089	.005
Gender	-.199	-.178	<.001
Alcohol Use	.092	.313	<.001
Limitations			
Some	.181	.087	.006
Total (vs. None)	-.088	-.029	.369
Constant	.368		

R^2 = .175
F = 36.00
p = <.001

Note: b, regression coefficient; b*, standardized coefficient.

Table 3. Annual Alcohol Use and Alcohol Problems Among Those Reporting Work Limitations

	Nature of Limitation			Length of Limitation			Need for Assistance		
	Circulatory/ Respiratory (N=21)	Muscular/ Skeletal (N=54)	Other (N-20)	<1 Month- 12 Months (N=15)	1-2 Years (N=11)	3+ Years (N=68)	Always/ Often (N=10)	Sometimes (N=13)	Rarely/ Never (N=72)
Mean Frequency of Using Alcohol	3.74	3.88	3.38	3.78	4.62	3.58	3.97	2.89	3.87
(SD)	(2.27)	(2.03)	(2.11)	(2.25)	(2.10)	(2.04)	(1.88)	(1.95)	(2.13)
Mean Frequency of Having 5 Drinks at a Single Sitting	7.79	7.76	7.67	6.99	7.57	7.95	7.84	8.20	7.65
(SD)	(2.02)	(1.86)	(2.06)	(2.35)	(2.33)	(1.71)	(1.84)	(1.83)	(1.96)
Percentage Reporting Alcohol Problems (CAGE)									
Cut Down	24	30	11	25	21	25	0	20	29
Annoyed	13	14	11	20	21	10	20	13	12
Guilty	13	16	6	9	9	15	20	19	11
Morning Drink	19	5	14	25	9	6	0	0	13
Percentage Scoring 2+	10	13	9	8	18	11	9	7	12
Mean Cage Score	.545	.541	.329	.652	.515	.459	.354	.366	.541
(SD)	(1.04)	(.98)	(.95)	(1.11)	(1.23)	(.914)	(.673)	(.635)	(1.07)

Table 4. Regression (OLS) of CAGE Score (Square Root) on Selected Variables Among Those Reporting Work Limitations

	Without Income			With Income		
Regressors	b	b*	p	b	b*	p
Income	-	-	-	-.032	-.089	.388
Age	-.003	-.079	.415	-.003	-.078	.441
Gender	-.294	-.241	-.013	-.326	-.258	.010
Alcohol Use	.092	.314	.002	.122	.412	<.001
Limitations	-.276	-.211	.045	-.222	-.158	.158
Length of Disability	-.005	-.006	.946	-.031	-.039	.692
Need for Assistance	.004	.005	.960	-.011	-.011	.916
Limitation Type						
Respiratory	.131	.090	.438	.166	.109	.373
Muscular (vs. Others)	.134	.110	.349	.093	.073	.556

Without Income:

Constant = .863
R^2 = .29
F = 4.50
p = <.001
n = (96)

With Income:

Constant = 1.12
R^2 = .35
F = 4.55
p = <.001
n = (86)

Note: b, regression coefficient; b*, standard coefficient.

Table 5. Limitations Status by Annual Sleeping Pill and Tranquillizer Use

	No Limitations (n=758)	Some Limitations (n=66)	Total Limitations (n=29)	Total Sample (n=854)
Sleeping Pill Use				
Percentage	7	10	31	8
Mean Frequency	1.9	1.12	1.59	1.11
(SD)	(.32)	(.37)	(.91)	(.37)
X^2(2df) = 21.20; p = <.001				
F = [2,859] 27.70; p = <.001				
Tranquillizer Use				
Percentage	3	18	30	5
Mean Frequency	1.05	1.24	1.60	1.08
(SD)	(.26)	(.56)	(.93)	(.35)
X^2(2df) = 63.08; p = <.001				
F = [2,858] 46.08; p = <.001				

Table 6. Annual Sleeping Pill and Tranquillizer Use Among Those Reporting Work Limitations

	Nature of Limitation			Length of Limitation[a]			Need for Assistance[a]		
	Circulatory/ Respiratory (N=22)	Muscular/ Skeletal (N=55)	Other (N=20)	<1 Month 12 Months (N=16)	1-2 Years (N=12)	3+ Years (N=69)	Always/ Often (N=10)	Sometimes (N=13)	Rarely/ Never (N=73)
Percentage Reporting Sleeping Pill Usage	12	20	15	22	22	15	17	39	13
Mean Frequency (SD)	1.24 (.67)	1.30 (.66)	1.19 (.50)	1.30 (.63)	1.30 (.63)	1.25 (.63)	1.26 (.64)	1.62 (.87)	1.20 (.56)
Percentage Reporting Tranquillizer Usage	12	20	38	20	53	17	43	47	14
Mean Frequency (SD)	1.16 (.47)	1.31 (.67)	1.66 (.92)	1.41 (.83)	1.60 (.65)	1.30 (.69)	1.68 (.90)	1.87 (1.00)	1.20 (.55)

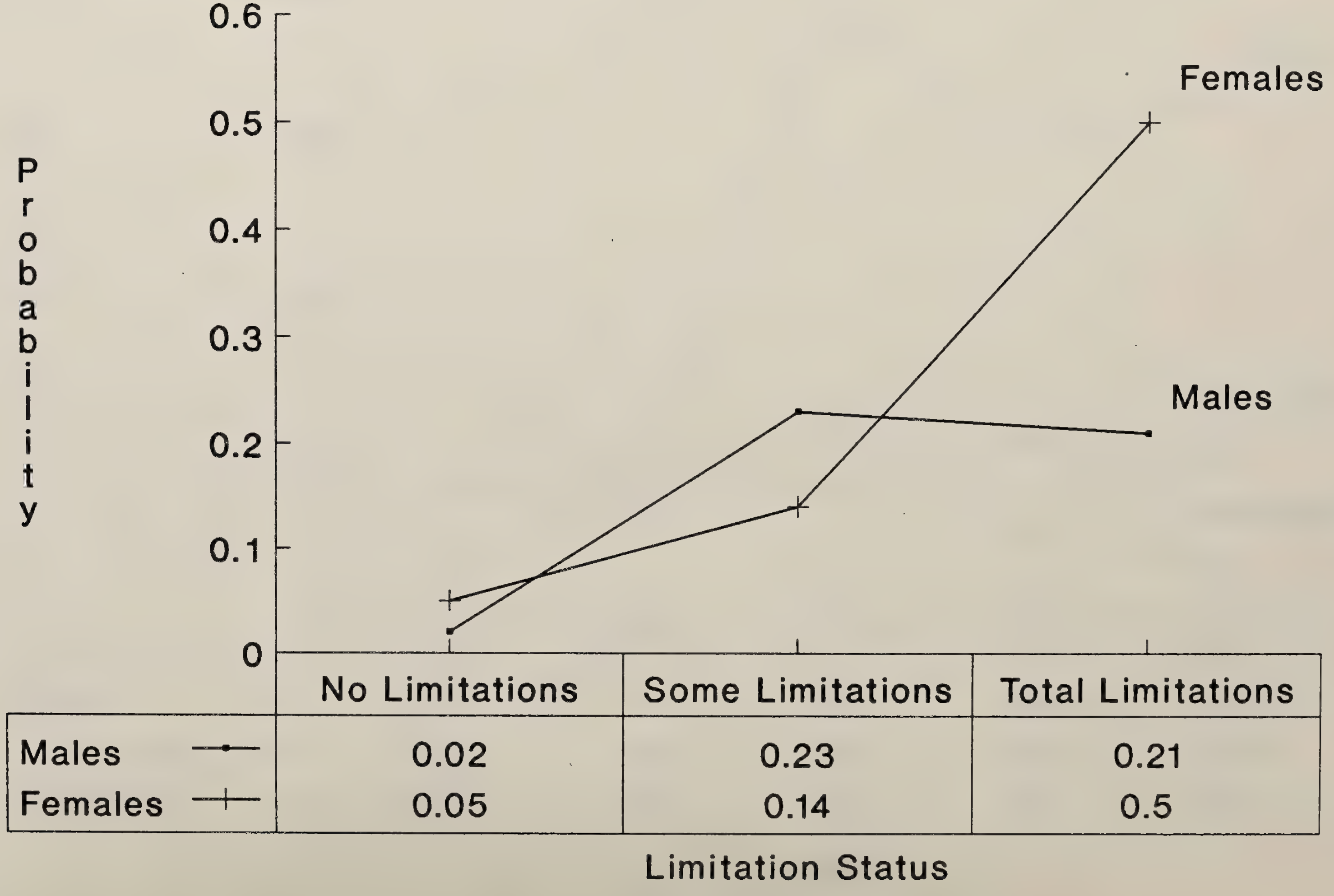
Note: Both length of limitation and a need for assistance are significantly associated with tranquillizer use at X^2(2df) = 7.95; p=.019 and X^2(2df) = 9.92; p = .007; F = (2,93)6.93; p = .002 respectively.

Table 7. Logistic Regression of Annual Sleeping Pill and Tranquillizer Use on Selected Variables Among the Total Sample (N=858) and Those Reporting Work Limitations (N=101)

	Sleeping Pills				Tranquillizers			
Independent Variables	b	Wald	(df)	p	b	Wald	(df)	p
Among Total Sample								
Age	.003	.11	1	.742	-.001	.00	1	.972
Gender	.664	6.47	1	.011	.558	2.05	1	.153
Limitations	-	17.56	2	<.001	-	28.37	2	<.001
Some	.392	.82	1	.365	2.687	23.74	1	<.001
Total (vs. None)	1.863	17.42	1	<.001	2.578	14.83	1	<.001
Gender Limitations	-	-	-	-	-	4.66	2	.097
Gender x Some	-	-	-	-	-1.513	.37	1	.055
Gender x Total	-	-	-	-	.452	.22	1	.641
Constant	-2.28	22.91	1	<.001	-2.146	13.91	1	<.001
Goodness of Fit	X^2=856.39 (df)=848 p=.411				X^2=851.22 (df)=845 p=.429			
Among Those Reporting Work Limitations								
Age	- .011	.21	1	.649	.041	2.03	1	.154
Gender	.631	1.05	1	.306	- .331	.19	1	.663
Limitations	1.533	5.28	1	.022	-2.984	2.15	1	.142
Need for Assistance	- .150	.39	1	.535	- .830	10.08	1	.002
Limitation Type	-	.34	2	.846	-	2.80	2	.247
Respiratory/Circulation	.083	.01	1	.933	4.277	1.44	1	.230
Muscular/Skeletal	.393	.26	1	.613	5.152	2.79	1	.095
Length of Disability	- .216	1.21	1	.272	- .298	2.12	1	.145
Age x Type	-	-	-	-	-	5.19	2	.075
Age x Resp./Cir.	-	-	-	-	- .122	2.80	1	.095
Age x Mus./Skel.	-	-	-	-	- .145	5.11	1	.024
Gender x Limitations	-	-	-	-	2.369	3.04	1	.081
Constant	- .839	.20	1	.658	-	-	-	-
Goodness of Fit	X^2=88.54 (df)=87 p=.441				X^2=81.66 (df)=85 p=.594			

Figure 1

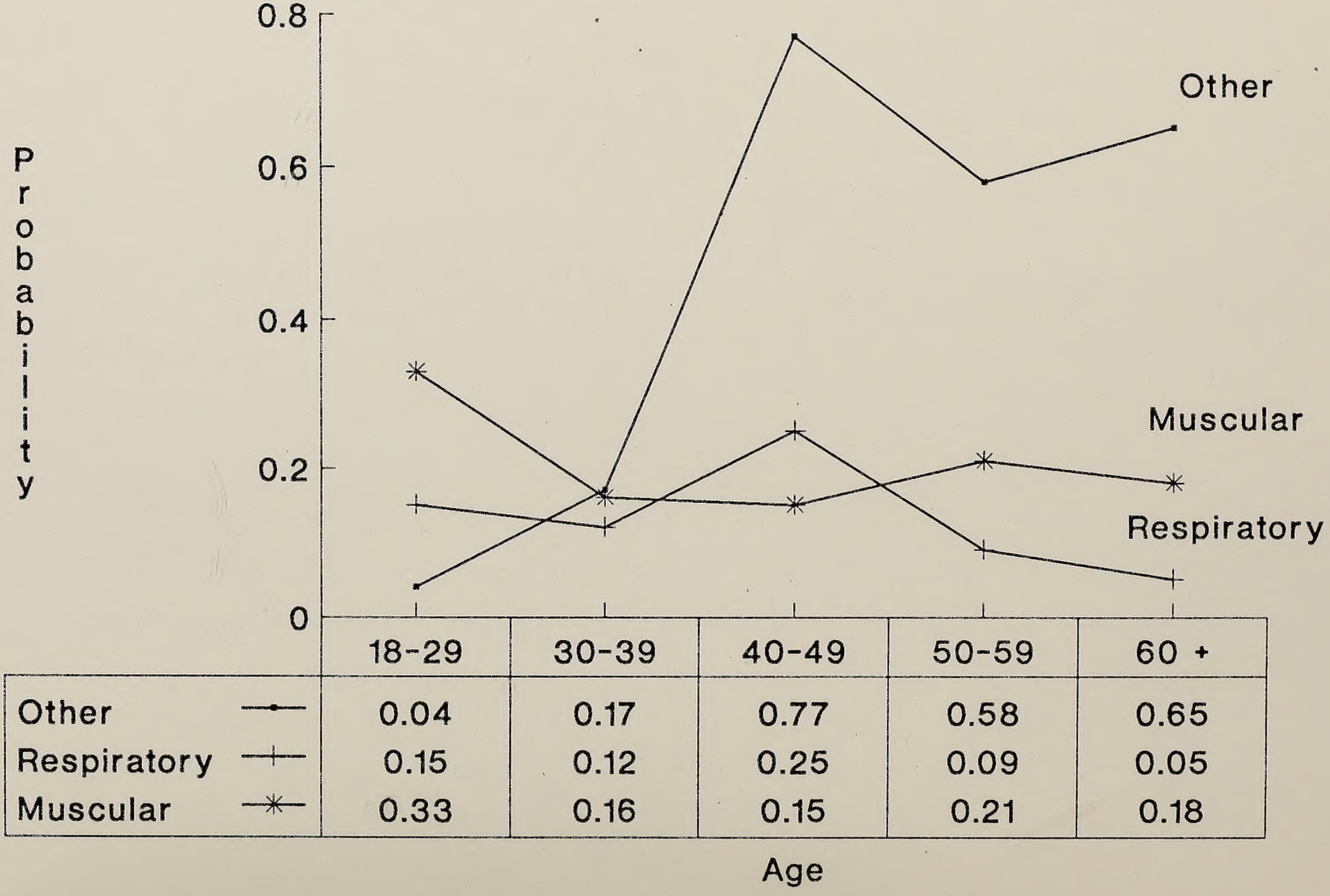
Mean Predicted Probability of
Tranquillizer Use by Limitation & Gender



	No Limitations	Some Limitations	Total Limitations
Males —•—	0.02	0.23	0.21
Females —+—	0.05	0.14	0.5

Figure 2

Mean Predicted Probability of
Tranquillizer Use by Age & Limitation Type



	18-29	30-39	40-49	50-59	60 +
Other —•—	0.04	0.17	0.77	0.58	0.65
Respiratory —+—	0.15	0.12	0.25	0.09	0.05
Muscular —✳—	0.33	0.16	0.15	0.21	0.18